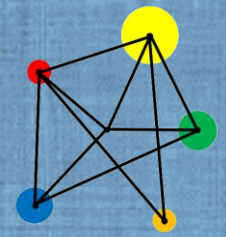
# Area and Perimeter of Rectangles & Triangles



Find area and perimeter of rectangles and triangles

Find area and perimeter of other quadrilaterals

# Vocabulary

**Area**
The amount of space inside of a flat (2-dimensional) object.

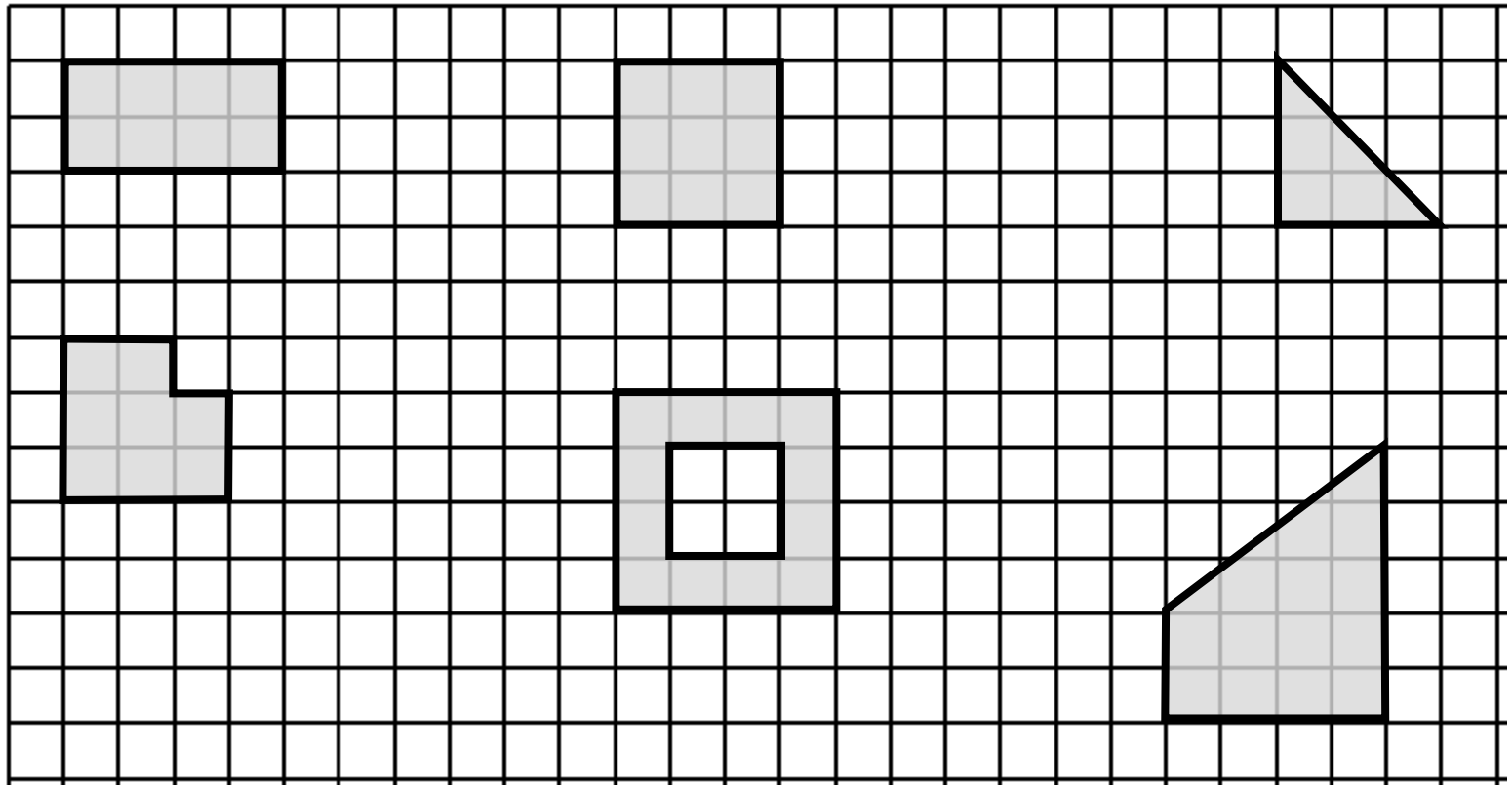
**Perimeter**
The distance around a two-dimensional shape.

**Units**
A unit is a standard measurement that we use to compare the size of quantities.

**Compound**
Made up of more than one part.

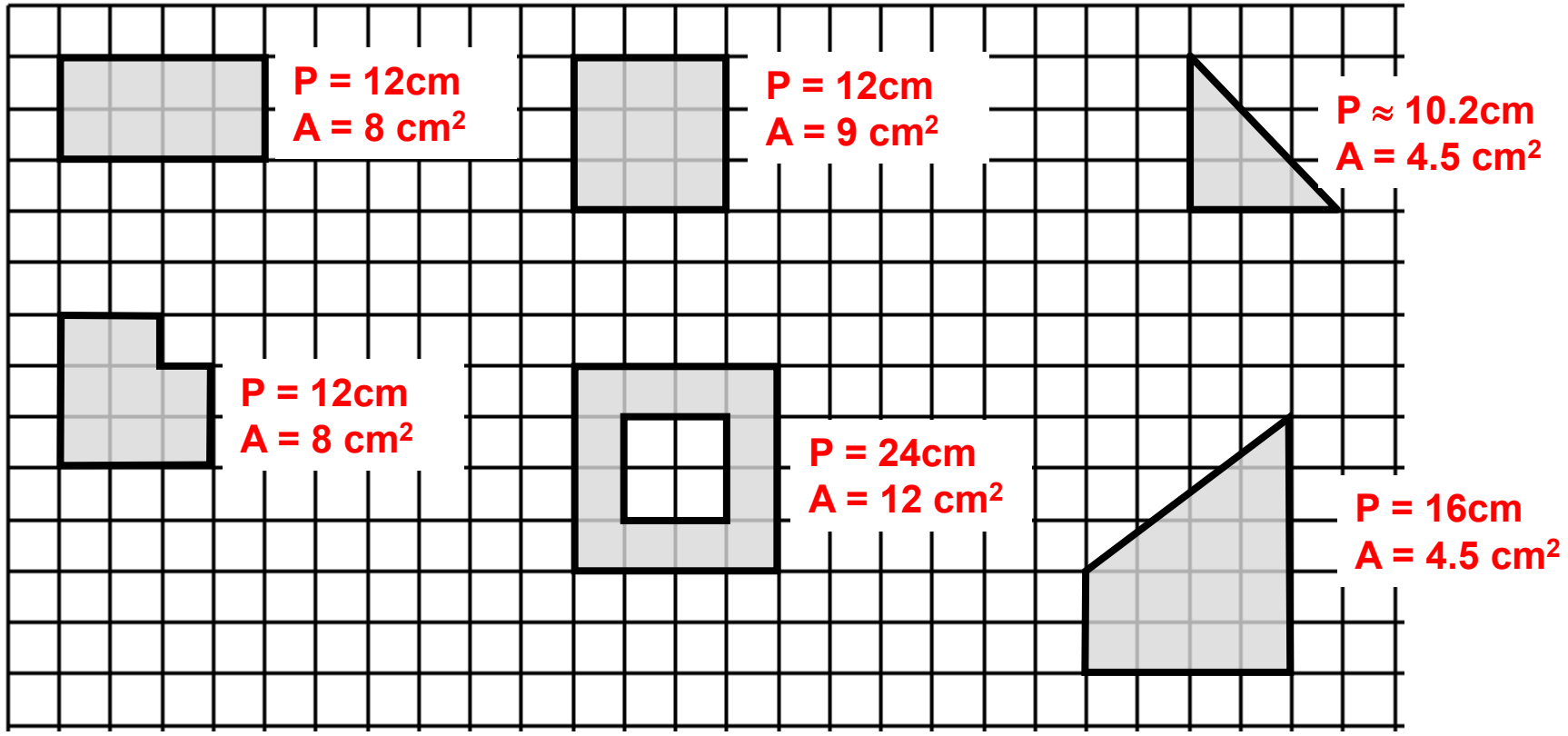
# Area and Perimeter

These shapes are drawn on a grid with 1cm squares.
Find the perimeter and area of each shape.

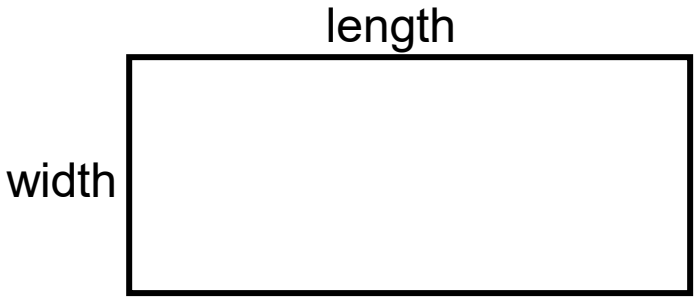


# Solutions

These shapes are drawn on a grid with 1cm squares.
Copy the shapes and try to find the perimeter and area of each shape:

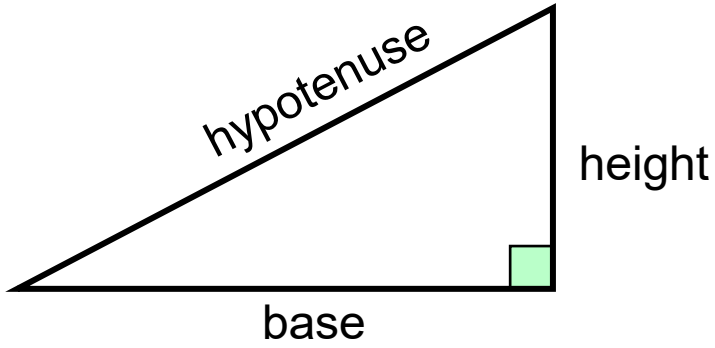


# Key Facts




Area = width x length

Perimeter = 2 x width + 2 x length

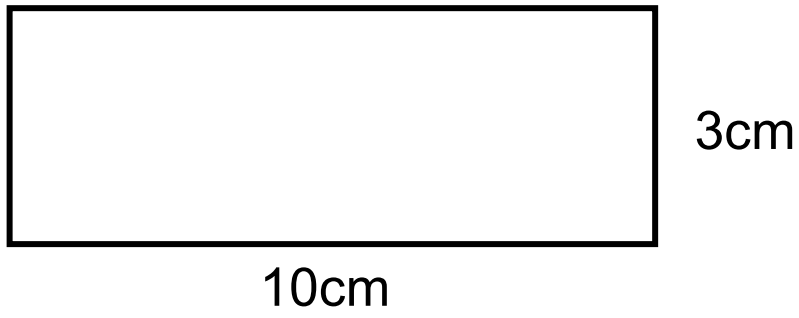


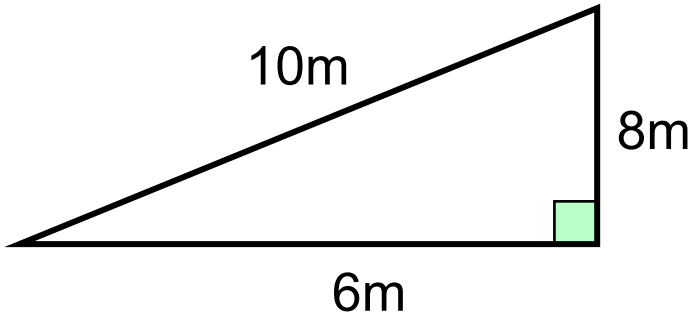

$$\text{Area} = \frac{\text{base} \times \text{height}}{2}$$

Perimeter = base + height + hypotenuse

# Examples

Find the area and perimeter of the rectangle and triangle.



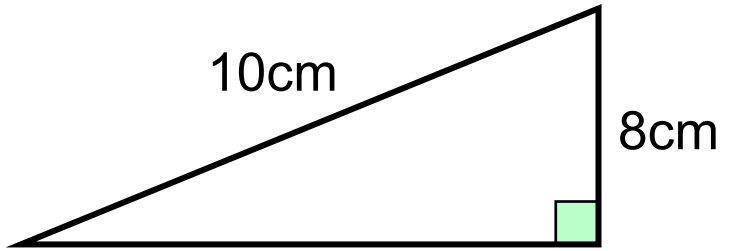
# Solution


Area = 3 x 10

= **30cm$^2$**

Perimeter = 2 x 3 + 2 x 10

= **26cm**




Area = $\frac{6 \times 8}{2}$

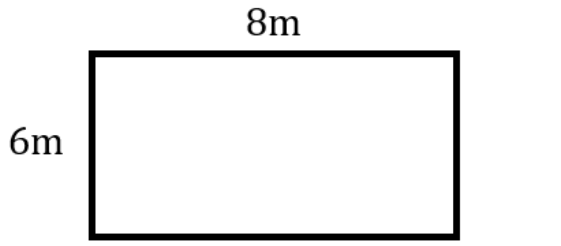
= **24cm$^2$**

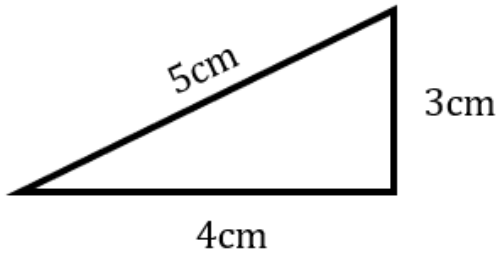
Perimeter = 6 + 8 + 10

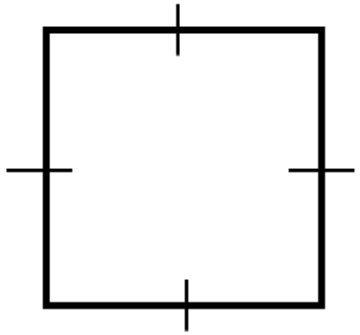
= **24cm**

# Exercise

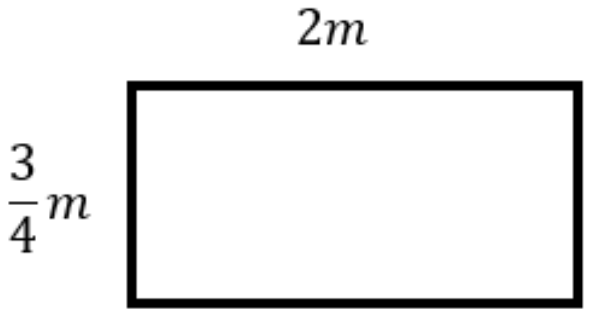
Find the area and perimeter of each shape

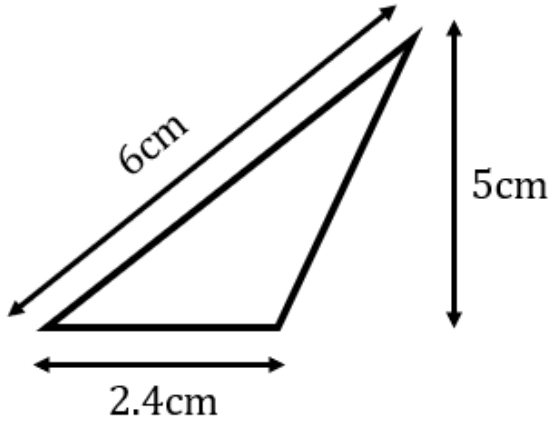


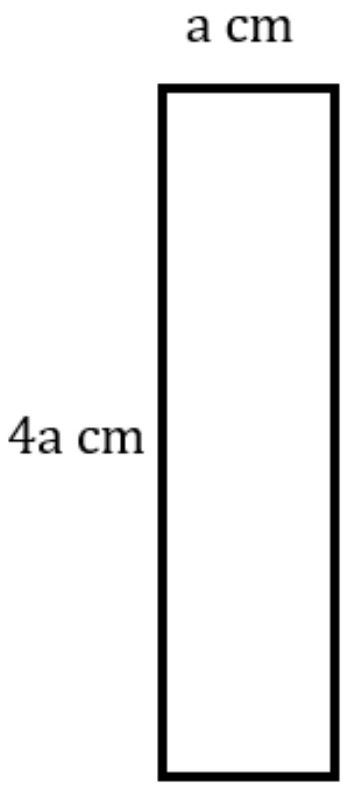




Find the area and perimeter of each shape



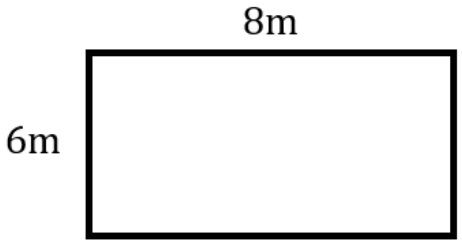




Find the area and perimeter of this shape.

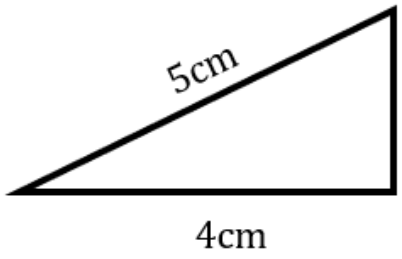


# Solutions

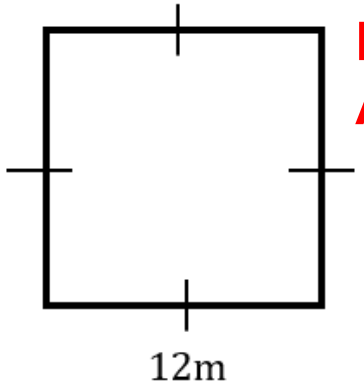
Find the area and perimeter of each shape




**P = 28m**
**A = 48m²**

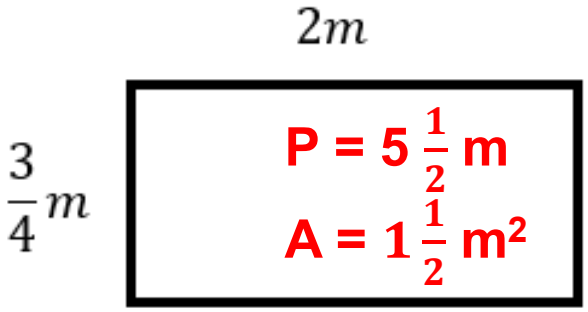



**P = 12cm**
**A = 6cm²**

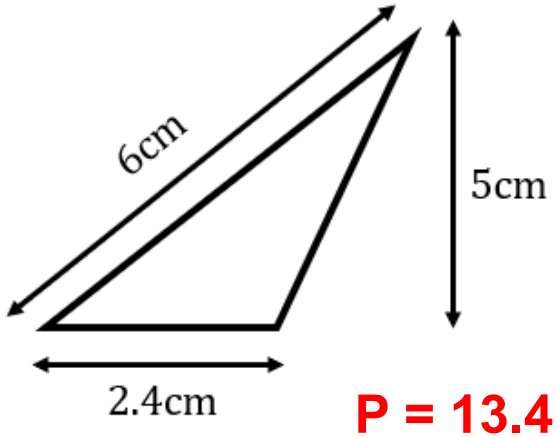



**P = 48m**
**A = 144m²**

Find the area and perimeter of each shape

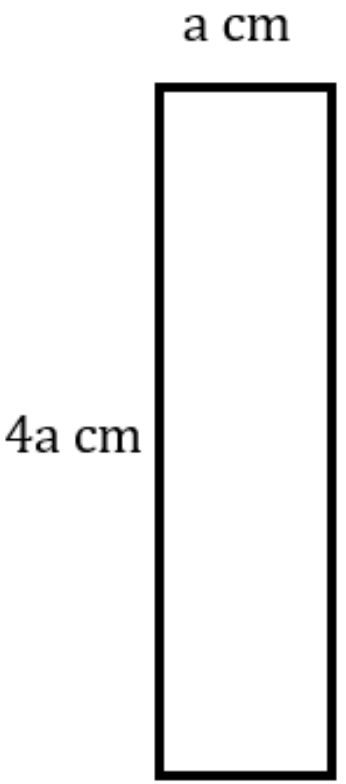



**P = $5\frac{1}{2}$ m**
**A = $1\frac{1}{2}$ m²**




**P = 13.4 cm**
**A = 6cm²**

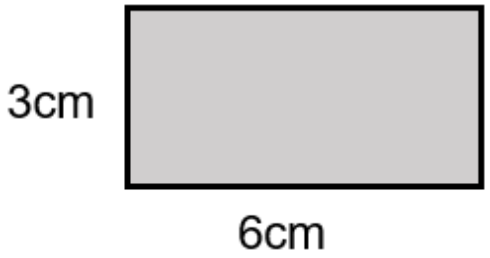
Find the area and perimeter of this shape.

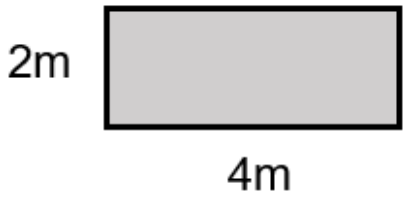


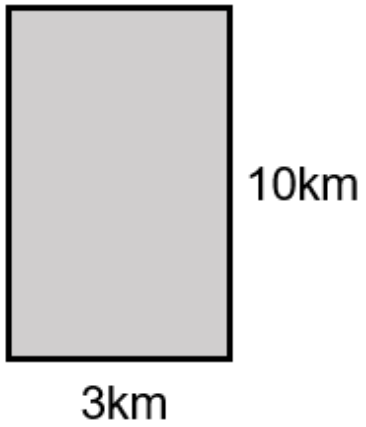

**P = 10a cm**
**A = 4a² cm²**

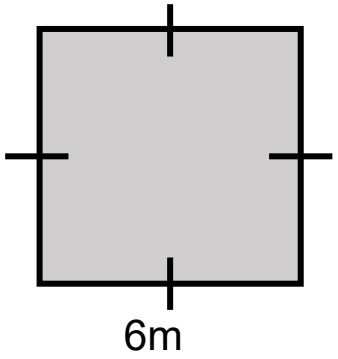
# Further Exercise

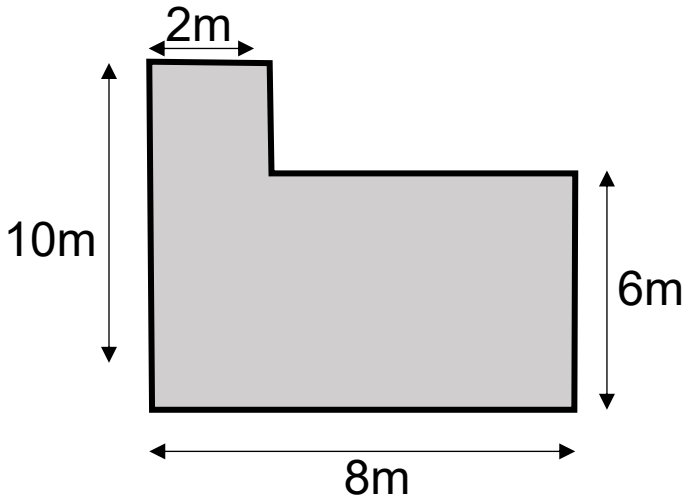
Find the area and perimeter of these shapes.

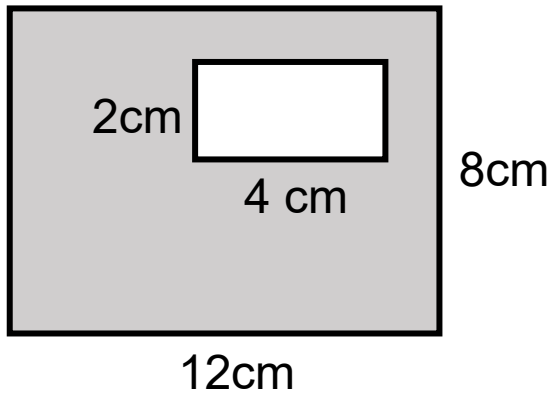


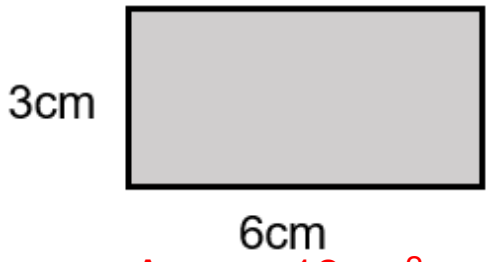



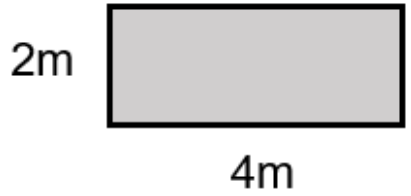



# Solutions

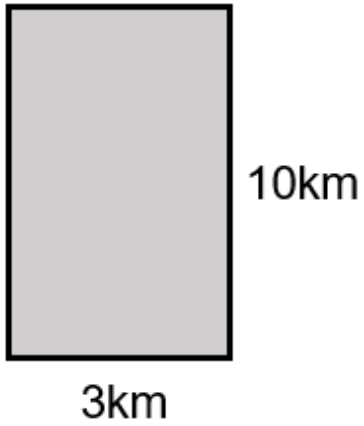
Find the area and perimeter of these shapes.



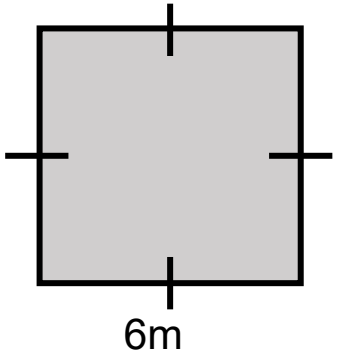

Area = 18cm$^2$
Perimeter = 18cm



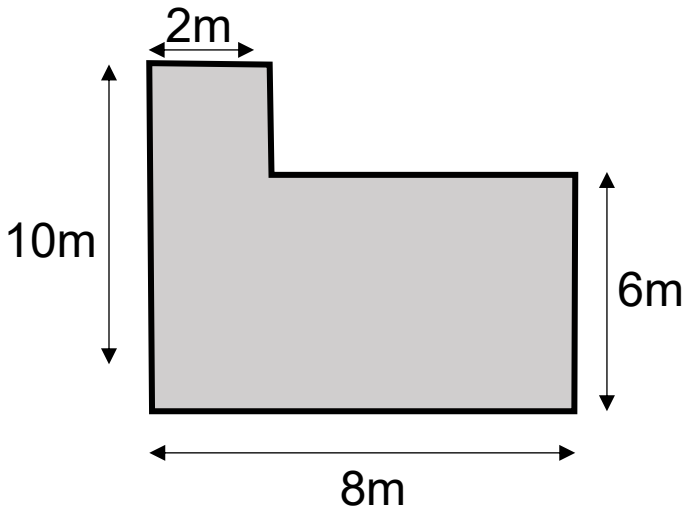

Area = 8m$^2$
Perimeter = 12m



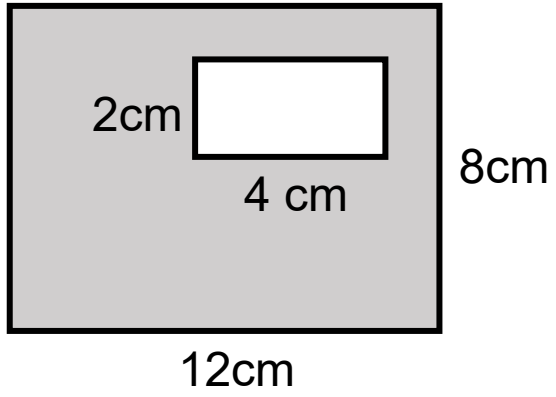

Area = 30km$^2$
Perimeter = 26km




Area = 36m$^2$
Perimeter = 24m



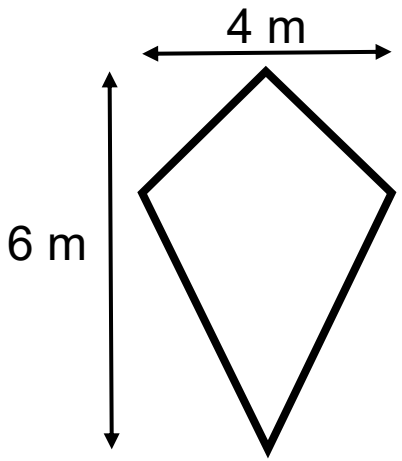

Area = 56m$^2$
Perimeter = 36m

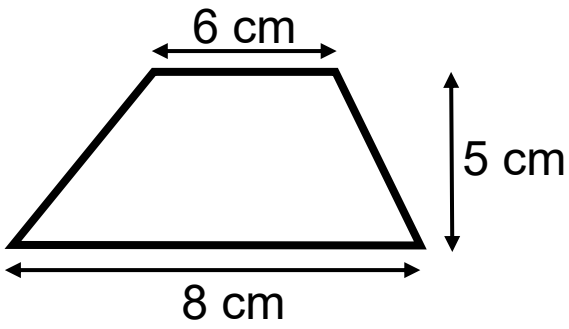


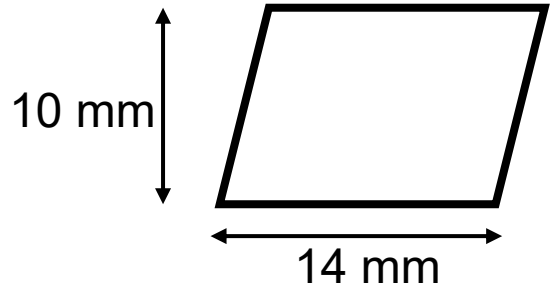

Area = 88cm$^2$
Perimeter = 52cm

# Other Quadrilaterals

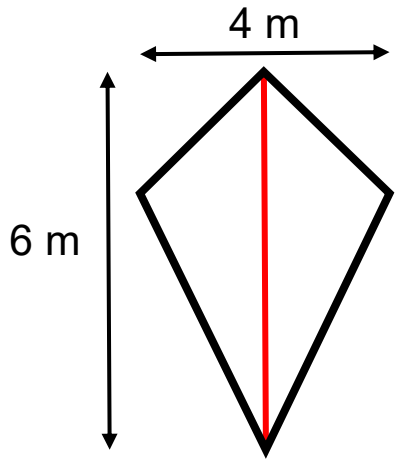
How would you find the area of these shapes?



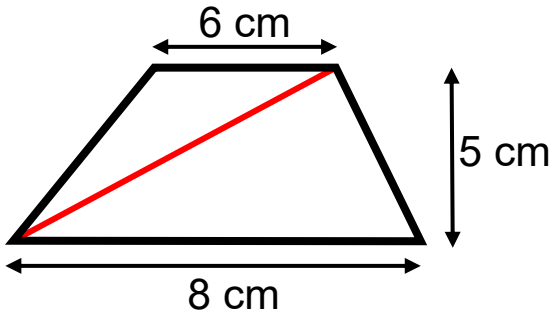



# Solutions



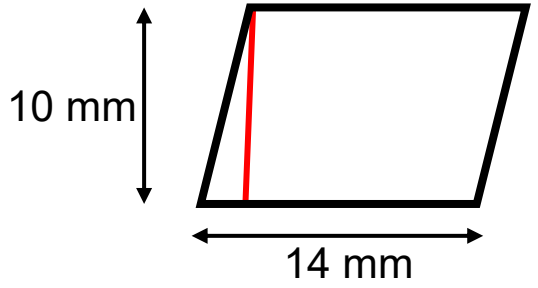

Area = $2 \times \frac{6 \times 2}{2}$

= **$12m^2$**




Area = $\frac{6 \times 5}{2} + \frac{8 \times 5}{2}$

= **$35cm^2$**

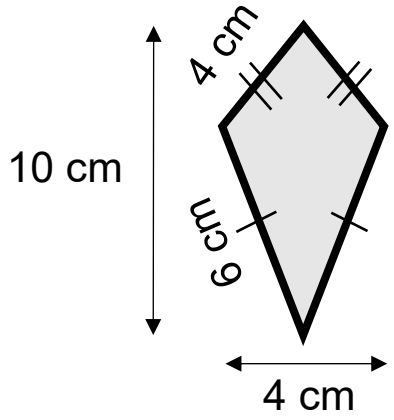


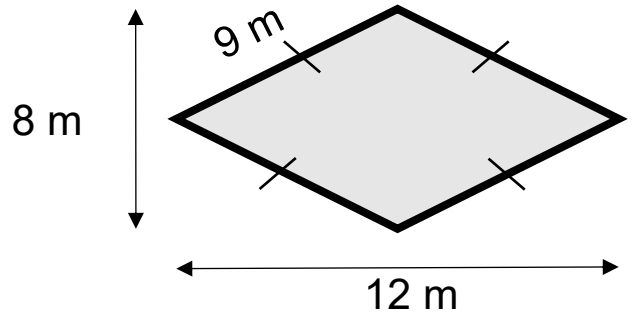

Area = 14 x 10

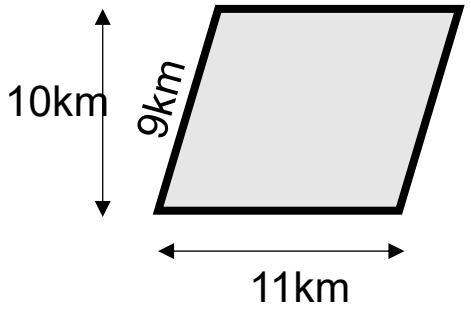
= **$140mm^2$**

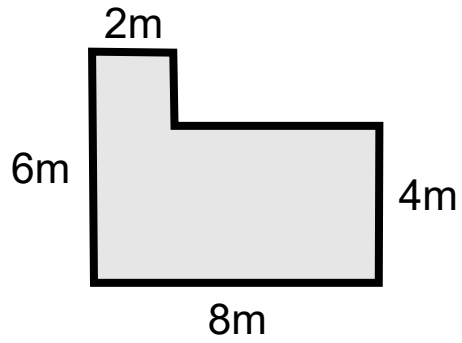
# Exercise

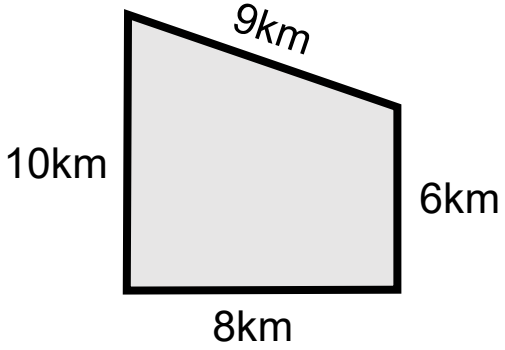
Find the area and perimeter of these shapes.

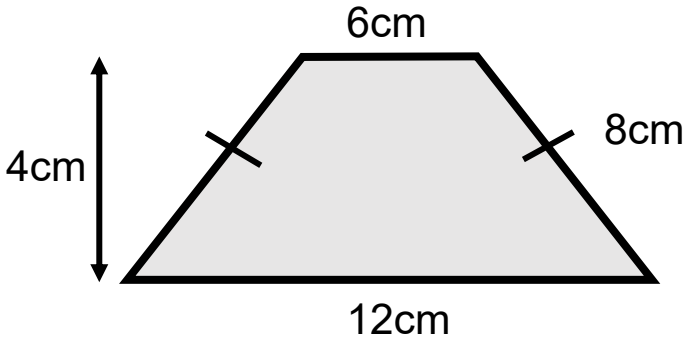


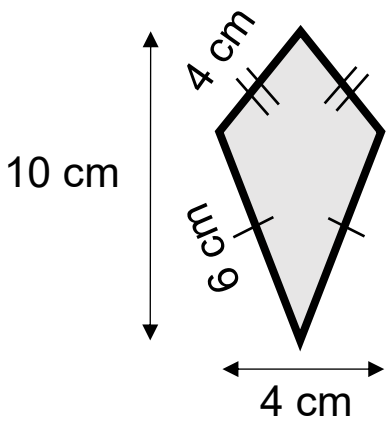



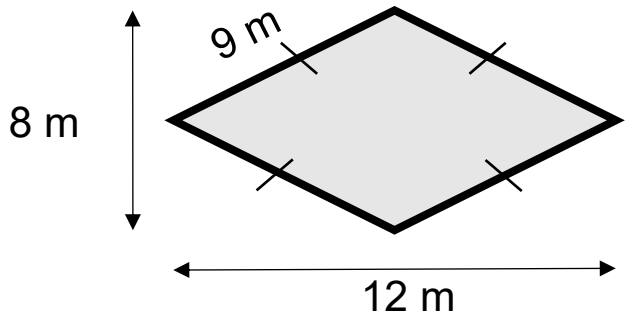



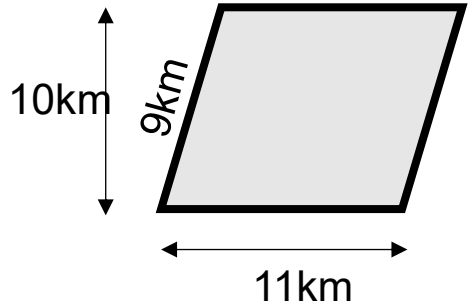
# Solutions



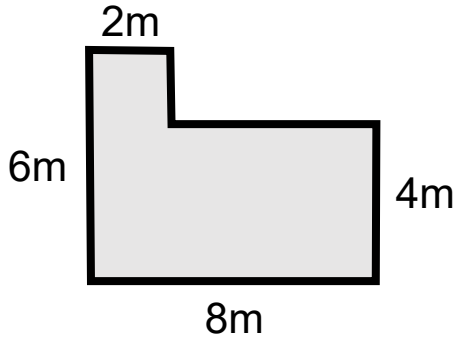

A = 20 $cm^2$
P = 20 cm



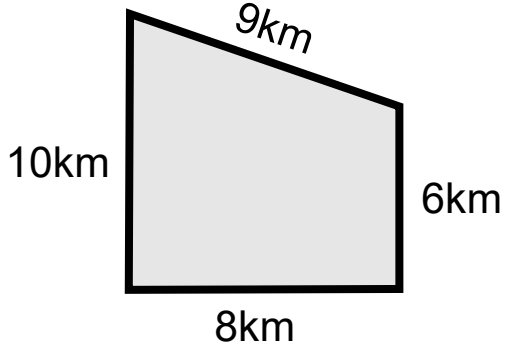

A = 48 $m^2$
P = 36 m



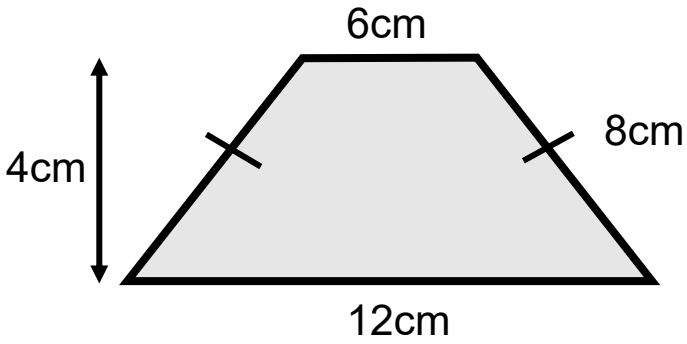

A = 110 $km^2$
P = 40km




A = 36 $m^2$
P = 28 m



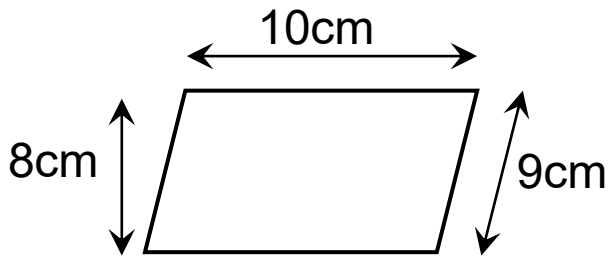

A = 64 $km^2$
P = 33 km

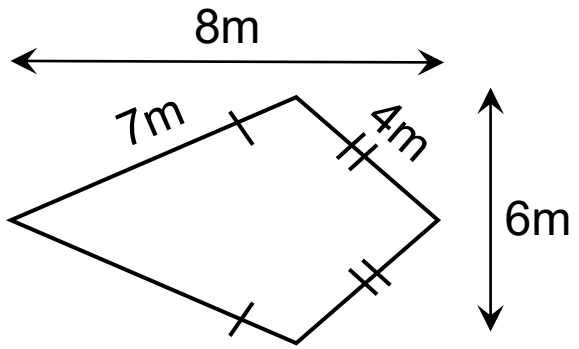


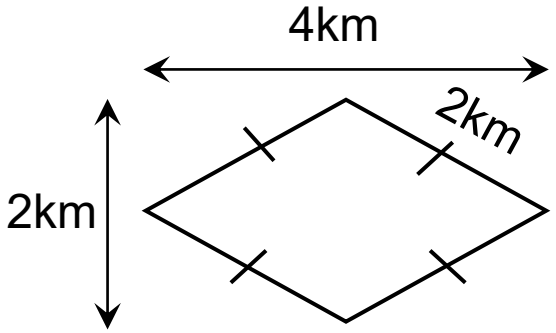

A = 36 $cm^2$
P = 34 cm

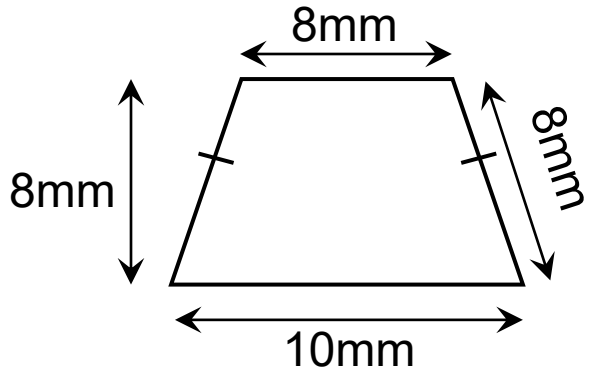
# Exercise

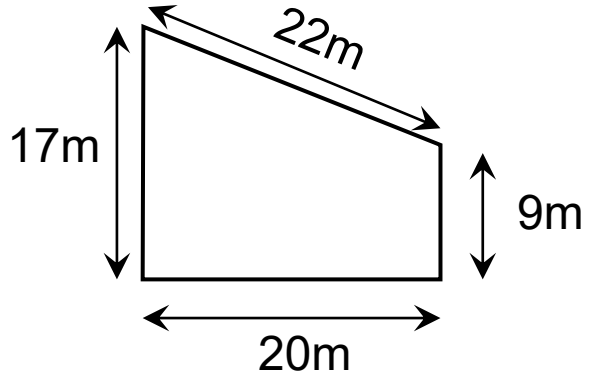
Find the area and perimeter of each shape



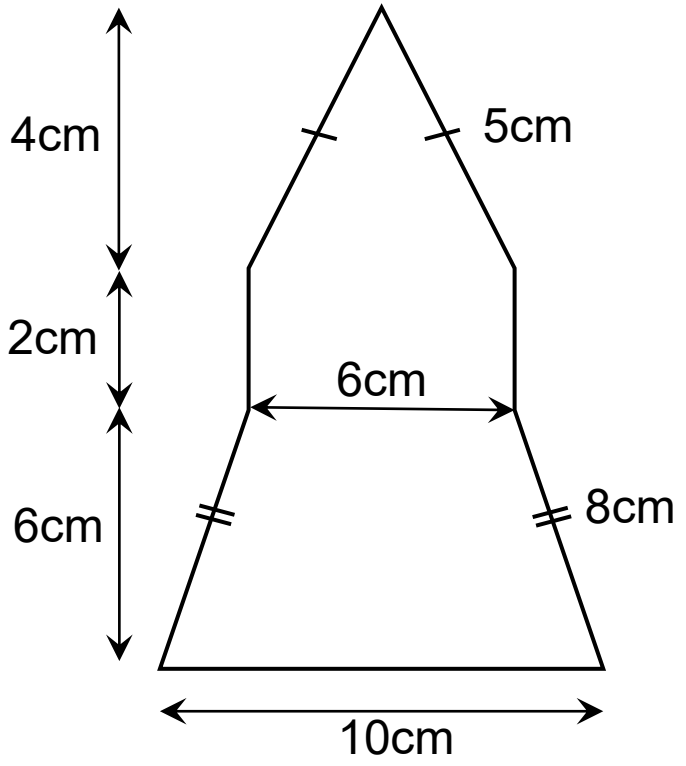



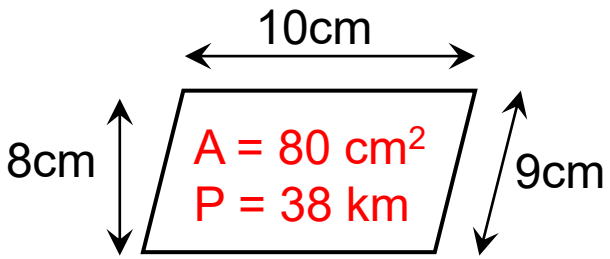



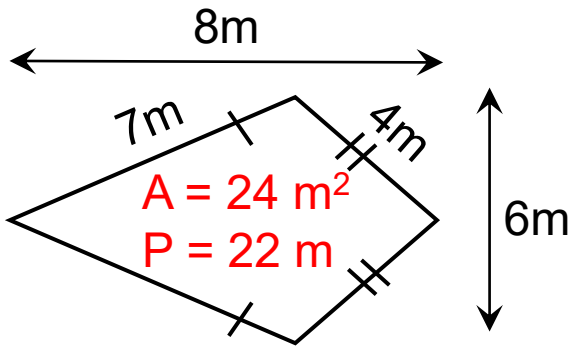

Find the area and perimeter of this shape.

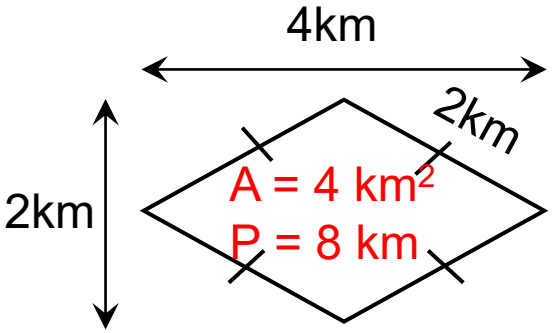


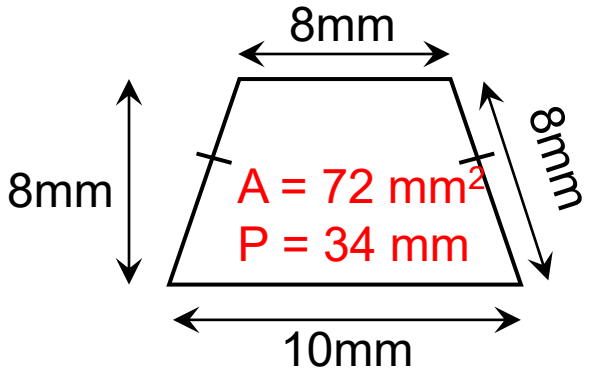
# Solutions

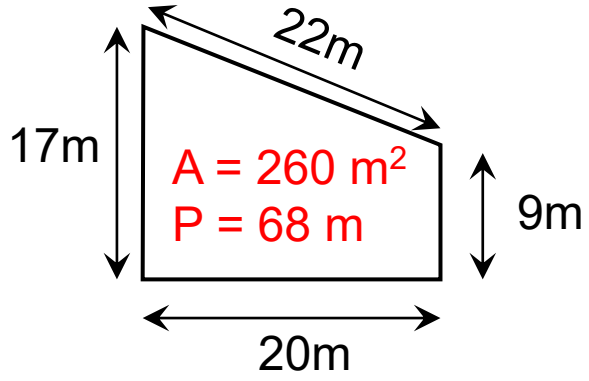
Find the area and perimeter of each shape



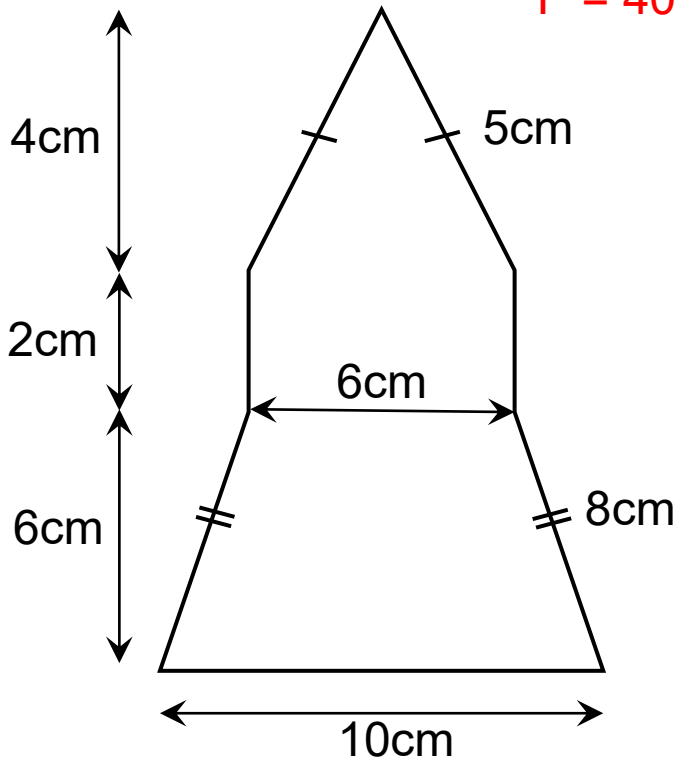



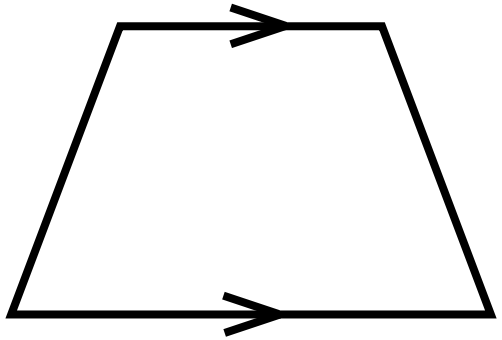

Find the area and perimeter of this shape.

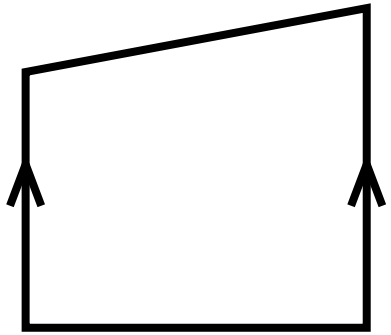
A = 72 cm²
P = 40 cm



# Extra : Trapezia

A trapezium is a quadrilateral with one pair of parallel sides.

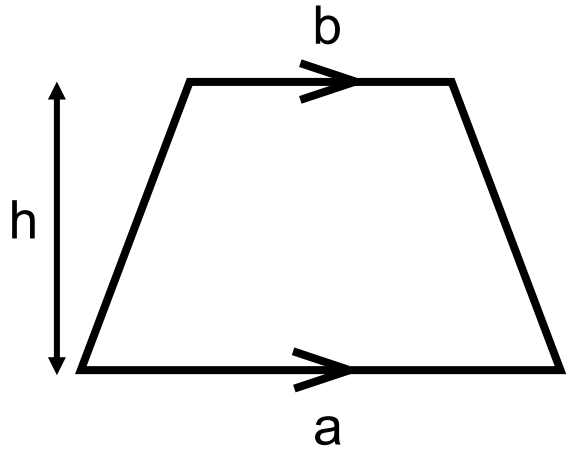


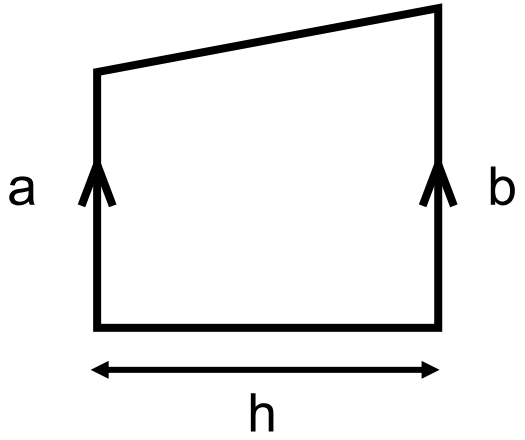


# Area of Trapezia

To find the area of a trapezium, use the formula:

$$Area = \frac{1}{2}(a + b)h$$



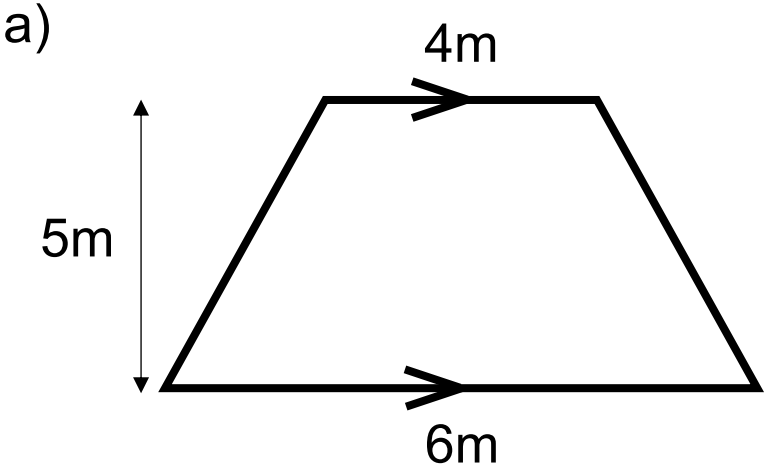



# Examples

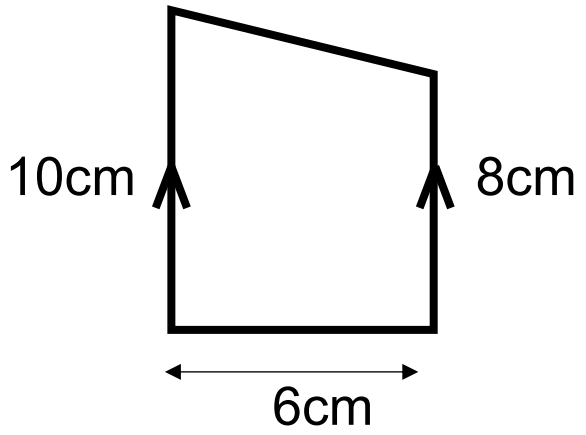
Find the area of the trapezia below:

$$Area = \frac{1}{2}(a + b)h$$

a)



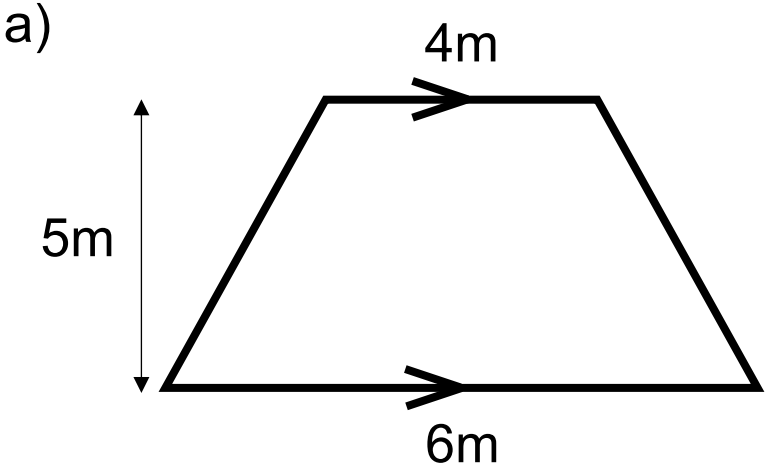

b)



# Solutions

$$Area = \frac{1}{2}(a + b)h$$

a)

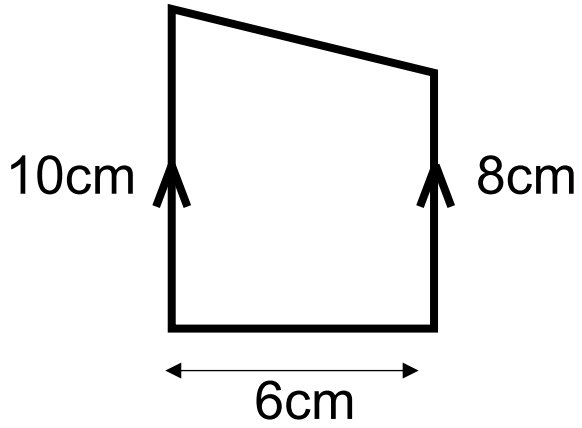



$$Area = \frac{1}{2} \times (6 + 4) \times 5$$

$$= \frac{1}{2} \times 10 \times 5$$

$$\underline{= 25cm^2}$$

b)



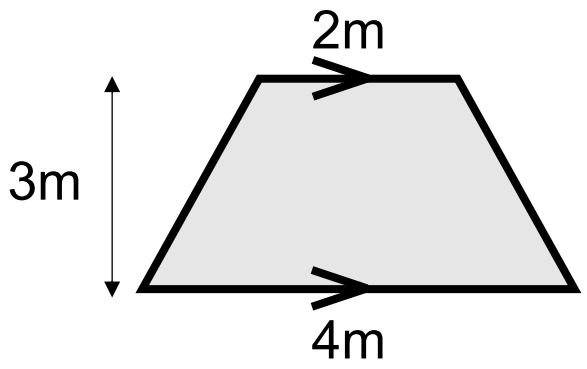

$$Area = \frac{1}{2} \times (10 + 8) \times 6$$

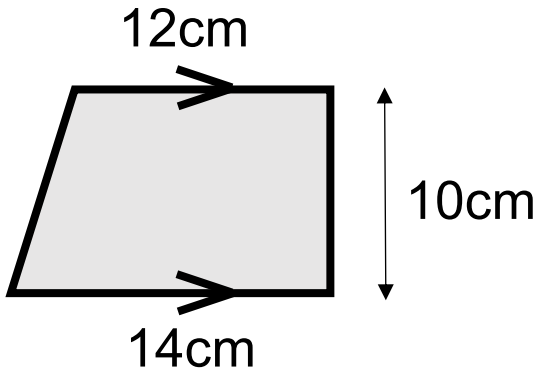
$$= \frac{1}{2} \times 18 \times 6$$

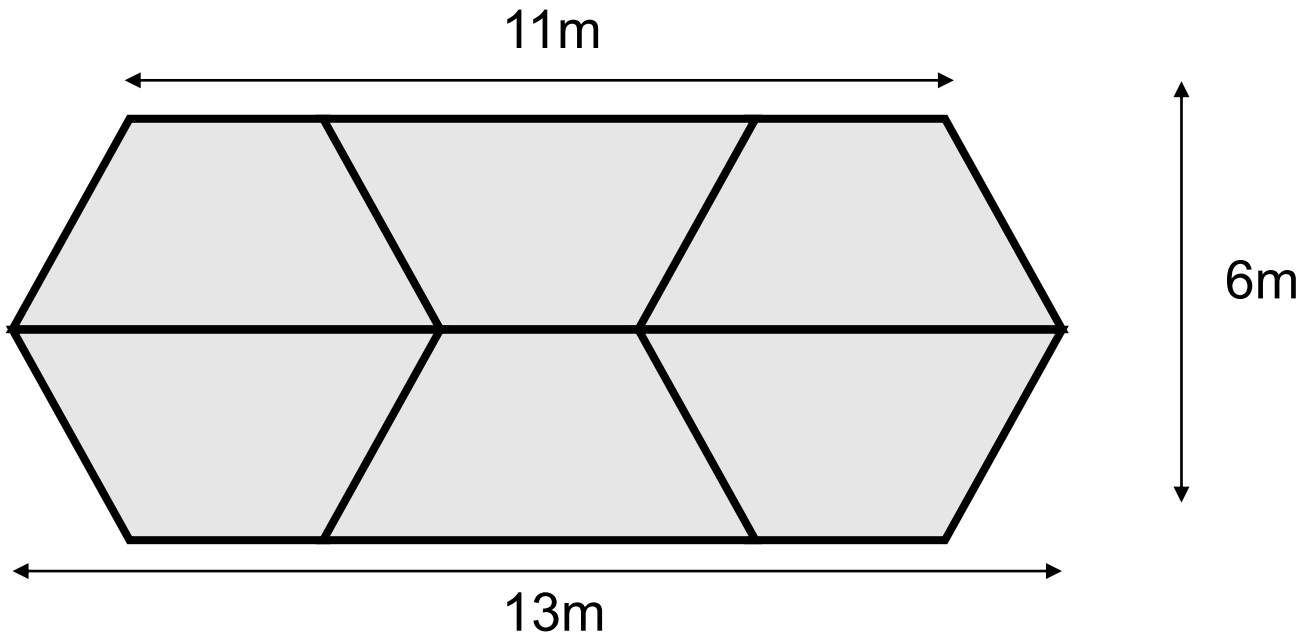
$$\underline{= 54m^2}$$

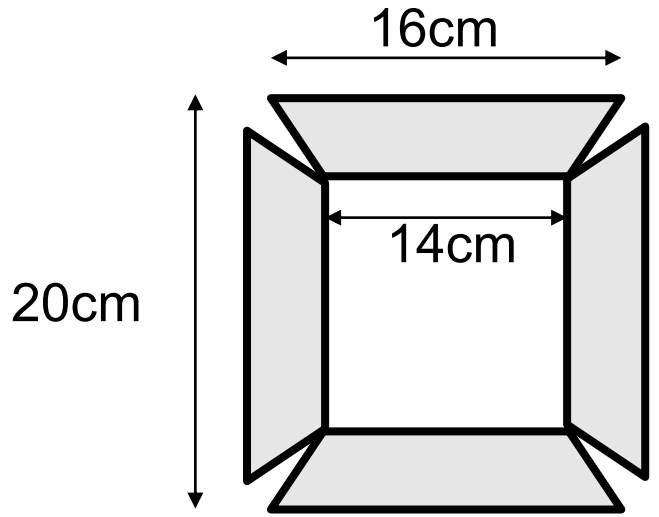
# Exercise

Find the area of the shapes below:



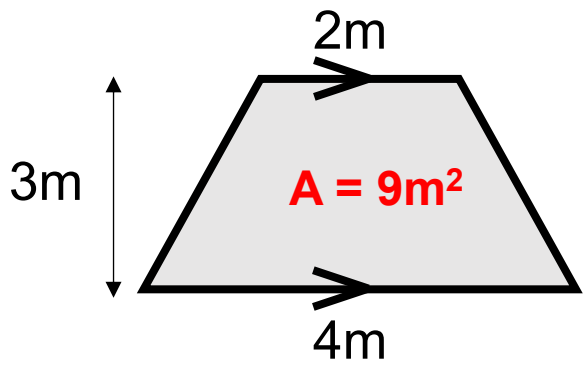



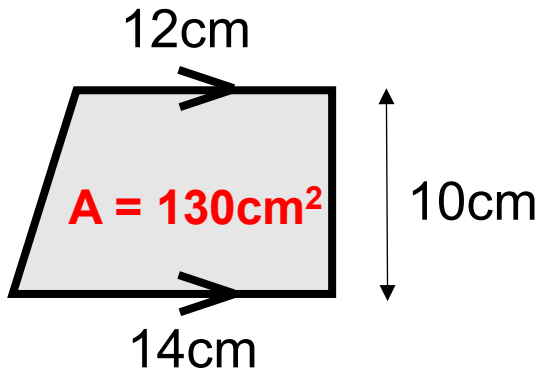



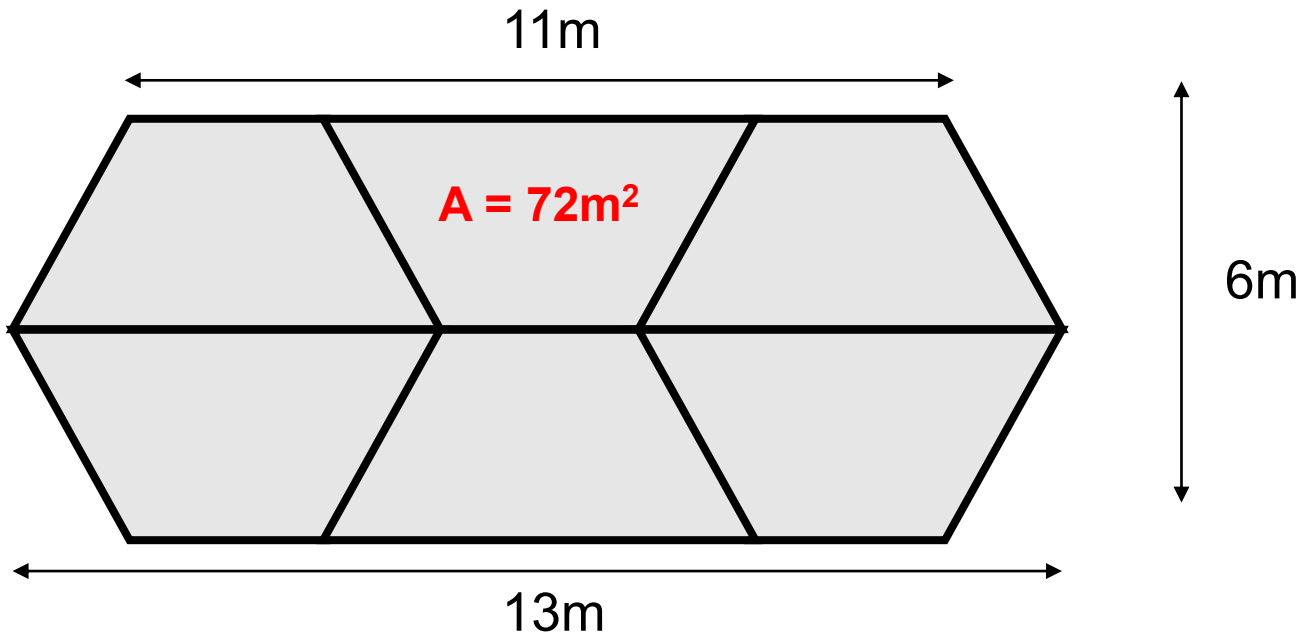



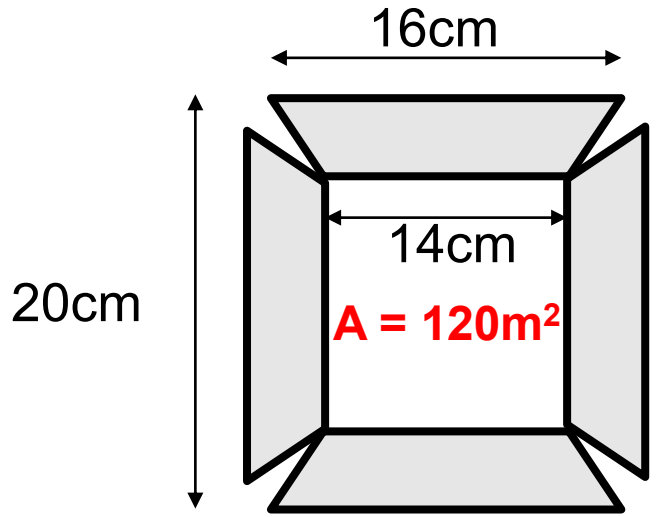
# Solutions

Find the area of the shapes below:



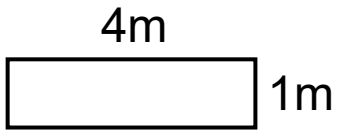



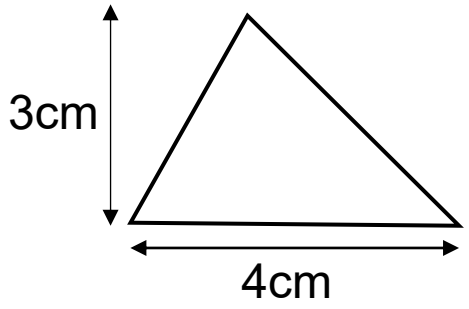



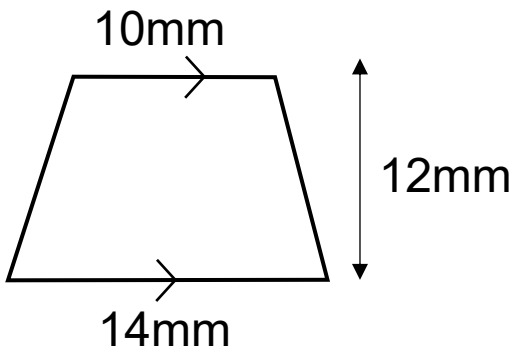



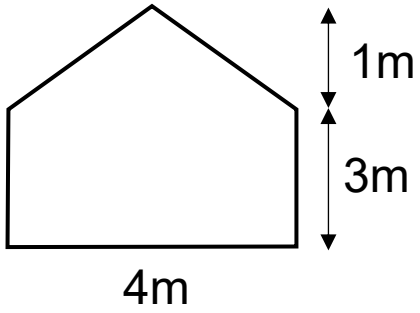
# Further Exercise

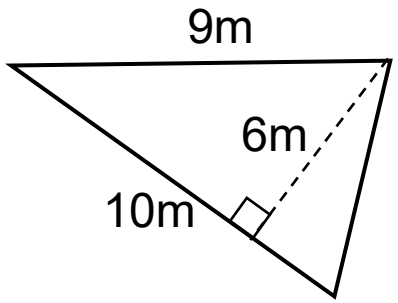
Find the area of the shapes below:

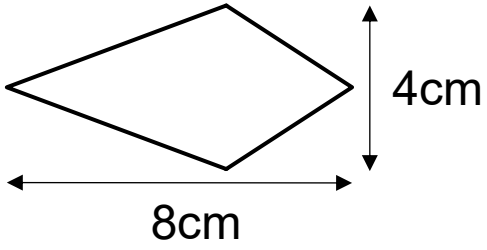


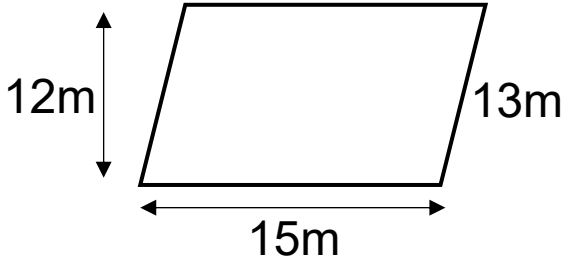



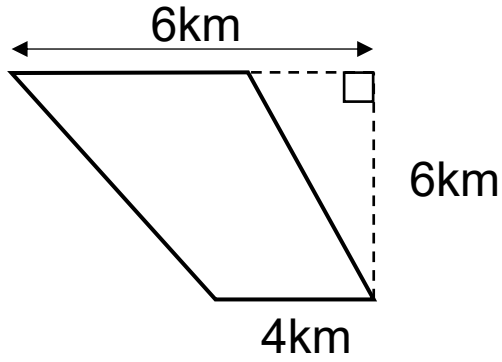



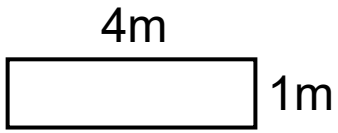



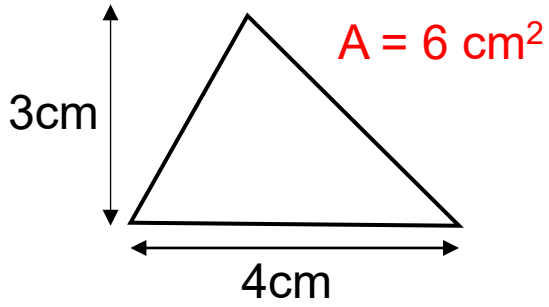



Find the area of the shapes below:

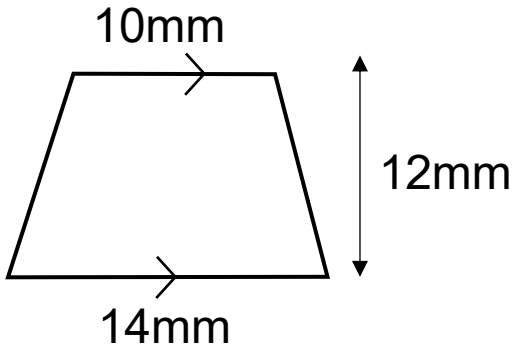
# Solutions



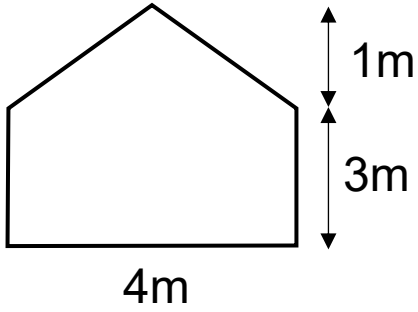

A = 4 $m^2$




A = 6 $cm^2$

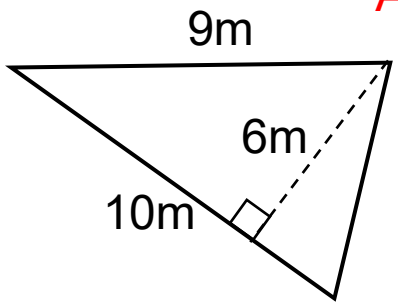


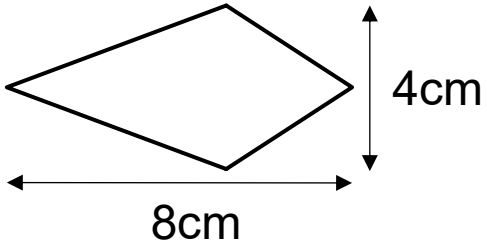

A = 144 $mm^2$



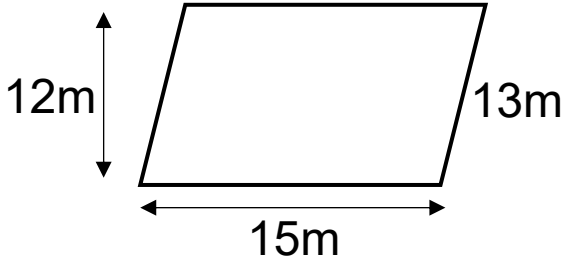

A = 14 $m^2$

A = 30 $m^2$

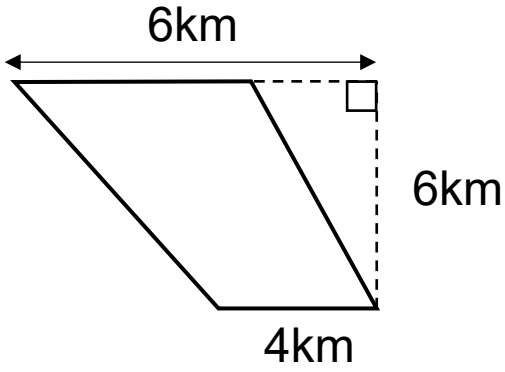



A = 16 $cm^2$



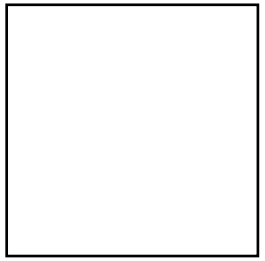

A = 180 $m^2$




A = 24 $km^2$

# Extension

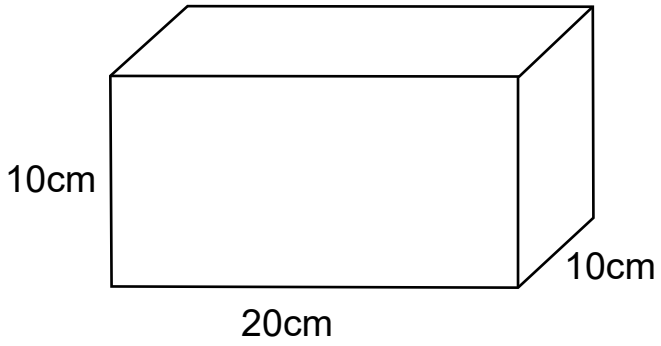
How many squares can you find with their perimeter equal to their area?

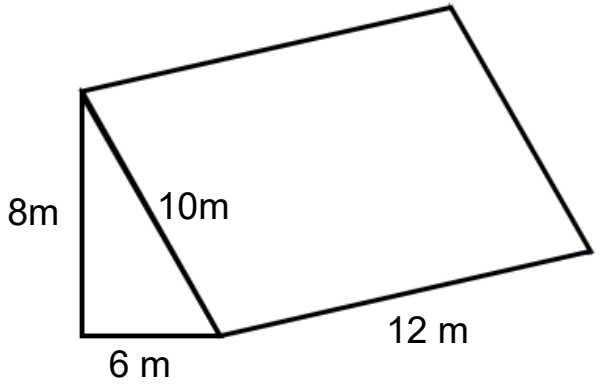


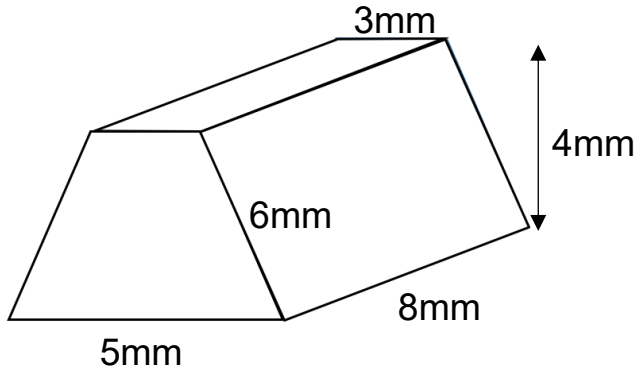
How many rectangles can you find with their perimeter equal to their area?

# Extension

The **surface area** of a shape is the area of all the faces of the solid added together.



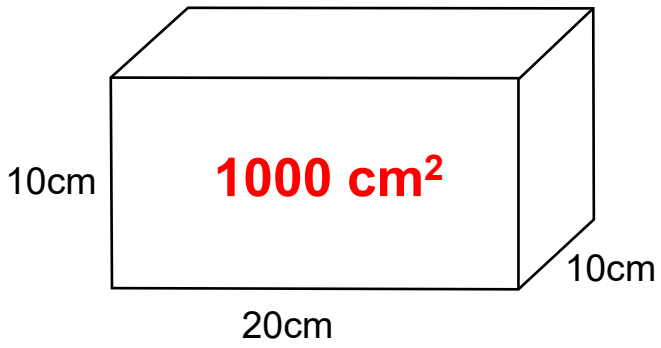



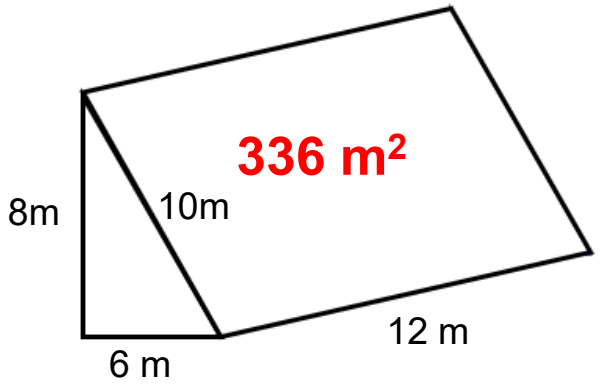



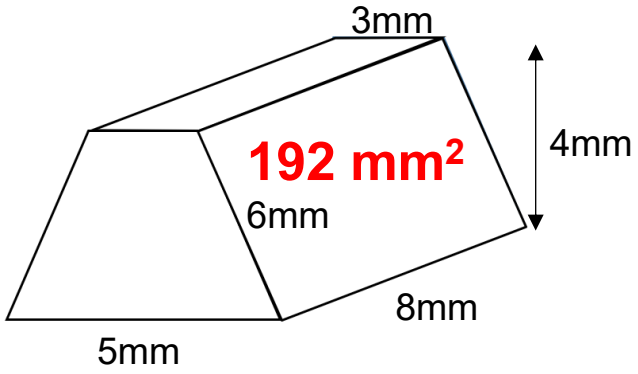

Can you find the surface area of these solids?

# Solution

Can you find the surface area of these solids?



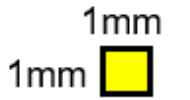



# Investigation

There are 10 mm in 1 cm.

Here is $1mm^2$.

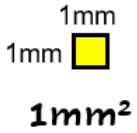


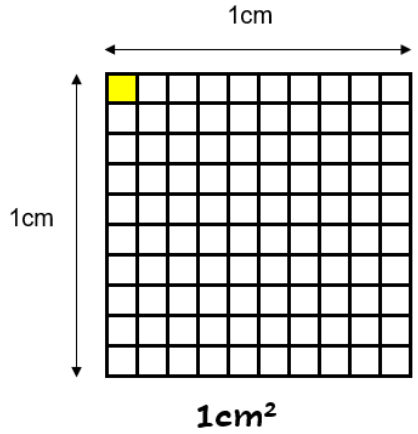

$1mm^2$

How many $mm^2$ are there in $1cm^2$ ?

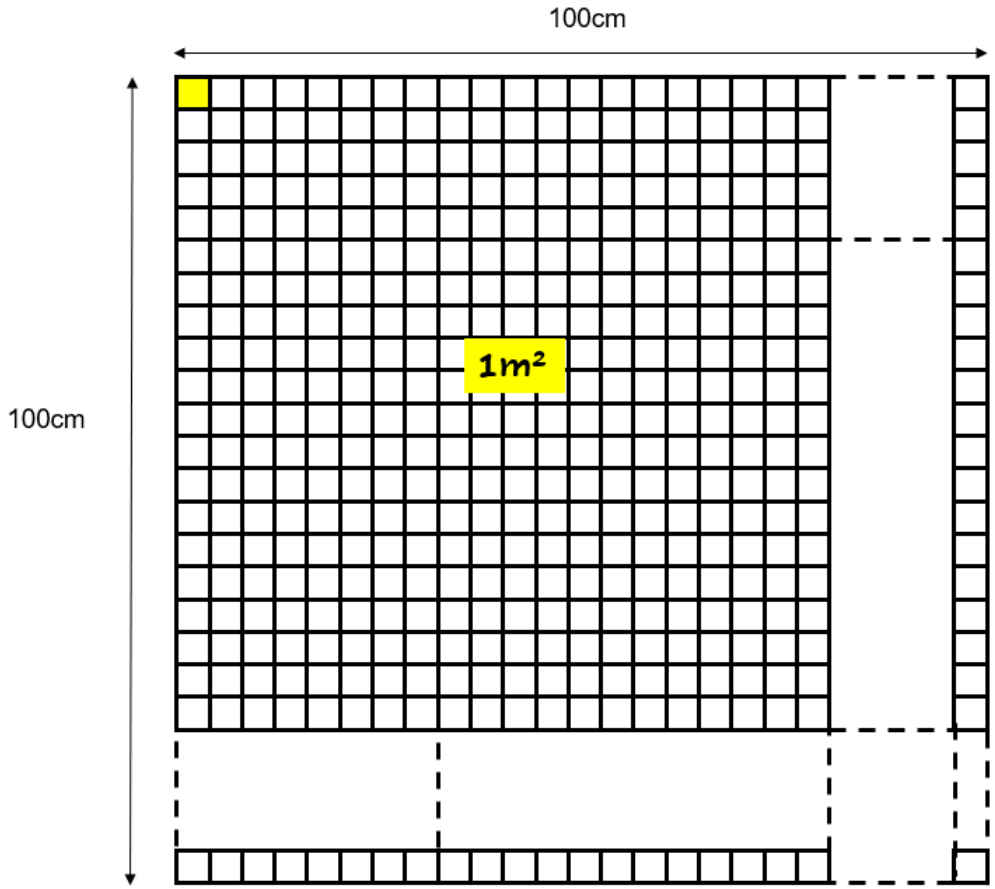
How many $mm^2$ are there in $1m^2$ ?

# Solution



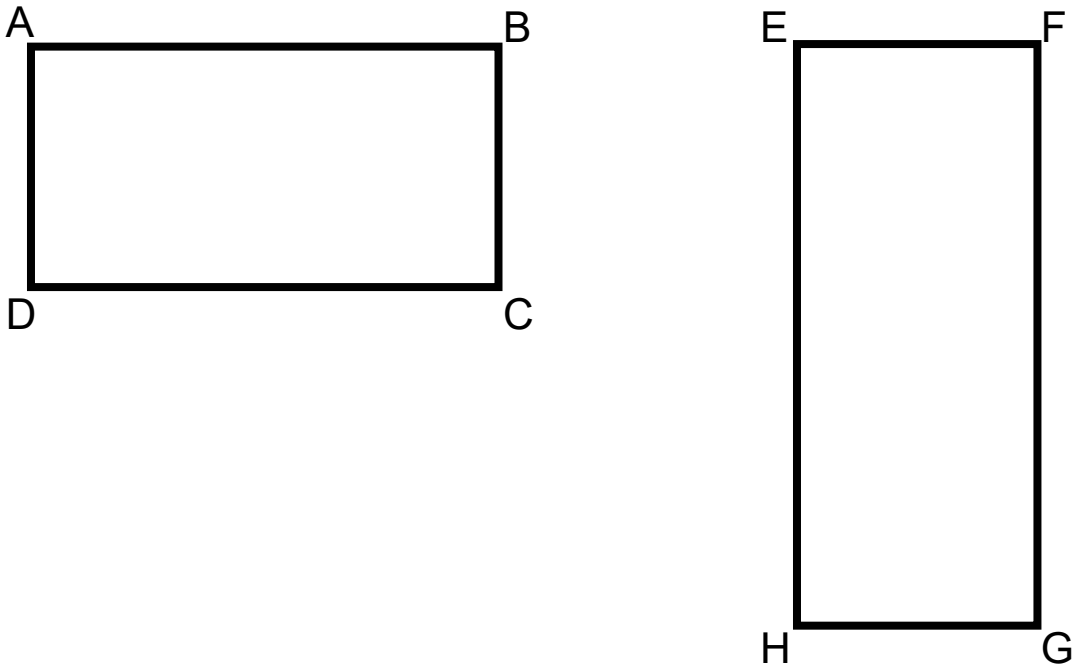

There are $100mm^2$ in $1m^2$.




There are 1 million $mm^2$ in $1m^2$.

# Exam Style Question

ABCD and EFGH are both rectangles.



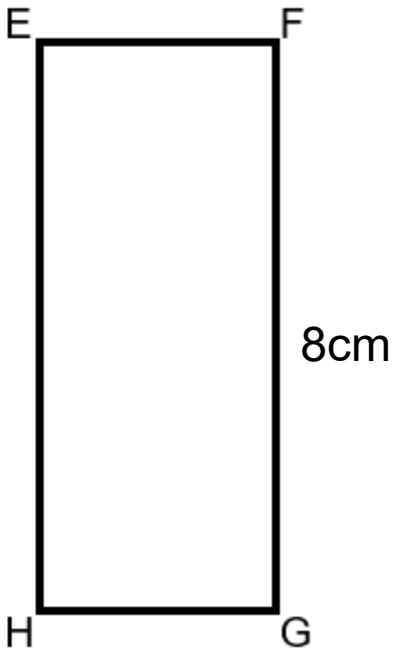

FG = 8cm
BC = EF

The perimeter of ABCD is 18cm

The area of EFGH is 24cm$^2$

Find the length of AB

# Solution


The area of EFGH is 24cm$^2$

***So EF and GH must both be 3cm***

***BC must be 3cm as it is the same as EF***

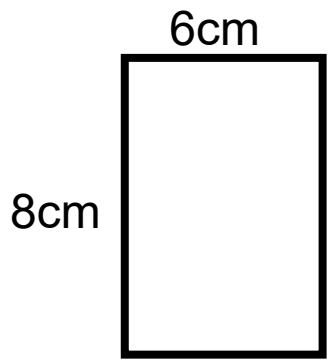
The perimeter of ABCD is 18cm.

***So AB and CD are the same and they add up to 12cm*** .

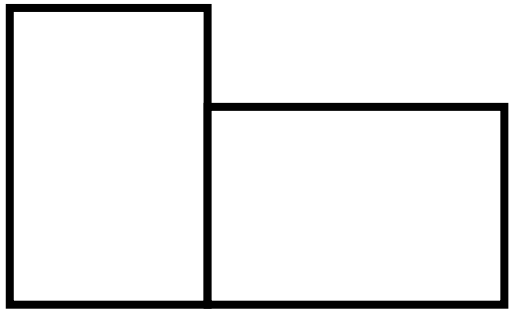
***So AB = 6cm***.

# Exam Style Question

Here is a rectangle.



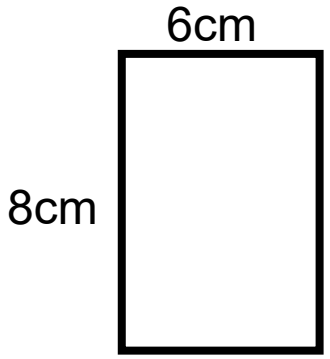

The 6-sided shape below is made from two of these rectangles.



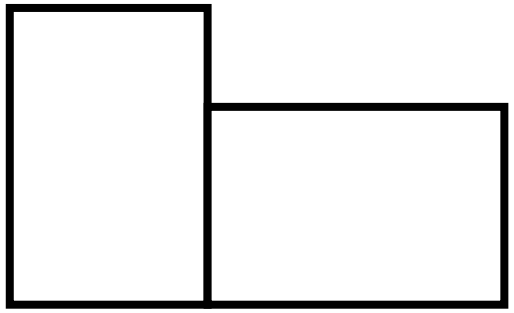
Work out the perimeter of this 6-sided shape.

# Solution

Here is a rectangle.




The 6-sided shape below is made from two of these rectangles.



Work out the perimeter of this 6-sided shape.

***Perimeter = 6 + 2 + 8 + 6 + 8 + 6 + 8***

***= 44cm***